UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SENT VIA EMAIL

July 19, 2011

Mr. Stephen M. Quigley
Conestoga-Rovers & Associates (CRA)
651 Colby Drive
Waterloo, Ontario, Canada
N2V 1C2

RE: Revised Vapor Intrusion Work Plan
South Dayton Dump and Landfill Site, Moraine, Ohio

Dear Mr. Quigley:

The U.S. Environmental Protection Agency (EPA) has completed its review of CRA's July 7, 2011 Vapor Intrusion Work Plan for the South Dayton Dump and Landfill Site located in Moraine, Ohio. This document was submitted in accordance with the Dispute Resolution Agreement between the Administrative Settlement Agreement and Order on Consent (ASAOC) Respondents and EPA dated December 15, 2010; and was revised to address comments EPA provided to CRA on March 17, 2011 and May11, 2011, and to incorporate information CRA collected during the on-Site building inspections conducted June 21-23, 2011.

We are pleased to note that the building inspections CRA conducted were extremely worthwhile and that, aside from a few exceptions noted in our comments, EPA agrees with CRA's proposed subslab sampling frequency.

Unfortunately, EPA still disapproves the July 7, 2011 Vapor Intrusion Work Plan as submitted, and requires CRA to amend the document in accordance with the attached comments. The majority of the comments focus on:

- Incorporating additional details from the building inspections and other important missing information into the work plan;
- Including detailed, building-specific site conceptual models on figures that also show the proposed sampling location(s) for each structure and support the proposed sampling locations;

- Providing more detailed descriptions of how the data will be evaluated, including flowcharts and tables;
- Expanding on the data quality objectives section; and
- Confirming that screening levels are consistent with the detection limits in the Quality Assurance Project Plan.

A revised Vapor Intrusion Work Plan must be submitted on or before Friday, August 5, 2011 as specified in Section X, U.S. EPA Approval of Plans and Other Submissions in the ASAOC. All of the enclosed comments must be addressed. If all comments are not adequately addressed, EPA may exercise its right to modify the document and provide the revised document to you for implementation or direct you to make specified modifications to the document.

If you believe that any changes are necessary other than those directed by EPA's enclosed comments, those changes must be discussed with, and approved by, EPA's Project Coordinator prior to re-submittal of the document. Those discussions may be memorialized in a progress report or other communication to EPA's Project Coordinator. In addition, all changes made to the document, other than those made specifically at the direction of EPA, must be specified in writing to EPA upon re-submittal of the document.

If you have any questions concerning this matter, or would like to discuss the attached comments in detail, please contact me at 312-886-1843 or at cibulskis.karen@epa.gov, or your legal counsel may contact Thomas Nash at 312-886-0552 or nash.thomas@epa.gov. As your office is also aware, I am working to schedule a call with CRA, OEPA and EPA's contractor on Monday, June 25, 2011 or Tuesday, June 26, 2011, to answer any questions you might have or to discuss EPA's comments and CRA's proposed revisions further before the revised work plan is due.

Sincerely,

Karen Cibulskis

Karen Cibulskis
Remedial Project Manager

Cc (via email): Tim Prendiville, SR-6J
Tom Nash, C-14J
Laura Marshall, OEPA
Brett Fishwild, CH2M
Ken Brown, ITW
Adam Loney, CRA

South Dayton Dump and Landfill Site Moraine, Ohio (Site) Vapor Intrusion (VI) Investigation

EPA Comments on the revised Vapor Intrusion (VI) Investigation Work Plan prepared by Conestoga-Rovers & Associates on July 7, 2011:

General Comments

1. The work plan organization presents the new building information that was just collected, and other information about the study, in an unclear manner, does not include enough detail, and is missing important information. Please re-write the work plan using the attached proposed outline.

2. Please provide a detailed description of exactly how the data will be evaluated; present the different sets of screening levels that will be used and the consequences of exceeding the various screening levels. A flow chart should be provided to illustrate this process, as well as corresponding tables showing the actual screening values for each chemical to be used at each decision step.

3. The work plan states the work will be performed in accordance with the QAPP, however, the QAPP was approved based on the objectives of the streamlined, presumptive remedy FS, and may not be appropriate for this work. Please provide tables to confirm the required screening levels in this work plan are consistent with the Method Detection Limits (MDLs) and Targeted Quantitation Limits (TQLs) for soil gas samples in the QAPP. This is especially critical for residential screening levels, which appear to be significantly lower than the MDLs and TQLs in the QAPP. Also, the QAPP does not address naphthalene.

   Lower TQLs and MDLs are provided in the July 21, 2008 Letter Work Plan for soil gas and also address naphthalene. However, these TQLs and MDLs still do not seem low enough for all residential screening levels (e.g., naphthalene, vinyl chloride). CRA will also need to verify the TQLs and MDLs are appropriate for indoor air samples that are collected.

4. The data quality objectives are not sufficiently developed. Please re-write them using the guidance provided in the attached proposed outline.

5. The work plan does not include adequate conceptual site models (CSMs) for the VI study buildings that were just inspected. A vapor intrusion CSM should address the following three components: 1) the VOC source (vadose zone and/or groundwater contamination, showing relevant sampling locations and available data); 2) migration from the subsurface and into an existing or reasonably anticipated future building; and 3) potential receptors (building occupants). It is stated in Section 2.1, 2nd paragraph, page 6 that CRA developed a CSM for each building and that these CSMs are summarized in Table 1. The first component of a CSM is not included in Table 1. Some aspects of the second component are addressed in Table 1, but an overall/summary discussion of each building is missing. This summary should include the building survey results and a description of the building characteristics

that are pertinent to the VI pathway. Also, the number of building occupants was not included in Table 1.

6. The work plan must include figures showing the proposed sampling locations at each building. Although the location descriptions in Table 1 are helpful, figures are necessary to ensure that adequate spatial coverage of each building is achieved. The information necessary to generate these figures (i.e., layout and use of the building) was obtained during the building survey, although it is understood that the selected locations may be slightly adjusted in the field (e.g. due to subsequent utility clearance). The figures should show the layout of each building's bottom floor. These figures can also be utilized for the CSM discussion.

7. In general the number and location of samples proposed at each building is acceptable with the following exceptions:

   - Subslab soil vapor levels of explosive gas (methane) should be measured at all buildings. It is not sufficient to measure only the indoor air in buildings that do not permit long term occupancy (i.e., storage buildings) because significant concentrations of methane could be present in subslab soil vapor. The slab may be currently preventing subslab soil vapors from intruding into indoor air, but the slab may be compromised in the future by cracks or intentional penetrations by the building owner. However, it is not necessary to measure subslab soil vapor levels of explosive gas (methane) at Building 3 on Parcel 5171 because this structure has fabric walls and an asphalt slab.
   - There is a modular office in Building B on Parcel 4610 (2225B East River Road). Although this office is currently unoccupied, consistent with the sampling approach for other buildings which are currently unoccupied but have the potential for future occupation, please collect one subslab soil vapor sample for VOC and naphthalene analysis at this building.
   - The un-numbered building on Parcel 5172 that is 721 square feet is not included on Table 1. Subslab soil vapor and indoor air levels of explosive gas (methane) should be measured at this building.
   - Building 1 on Parcel 3253 – Two subslab soil vapor samples were proposed for this building. However, due to the poor condition of the basement walls and the potential for vapor intrusion through these walls, an indoor air sample should be collected within the basement also. Additionally, the two proposed subslab soil vapor samples may be very close to each other, they should be spread out to achieve better spatial coverage.
   - Building 1 on Parcel 5172 – Five subslab soil vapor samples were proposed for this building. However, an additional subslab soil vapor sample should be collected in the center of the building on the machine shop side to achieve better spatial coverage.

8. There is some discrepancy between the square footages provided in Table 1 and Figure 1 for some of the buildings. This will not affect the proposed sampling plan, but should be corrected for consistency sake.

   - Building 1 on Parcel 3253

- Building 1 on Parcel 5054
- Building 4 on Parcel 5054
- Building 1 on Parcel 5172
- Building 1 on Parcel 5174

9. Please indicate somewhere in the work plan that a VI work plan addendum will be developed if additional VI investigation activities are required based on the results of the first or second rounds of subslab soil vapor sampling. USEPA will need to review and approve the proposed indoor air sampling locations if indoor air sampling is deemed necessary at any of the buildings.

Specific Comments

1. **Section 1.0, 3rd paragraph, page 2** – It is stated that CRA does not proposed to include benzo(b)fluoranthene in the VI study. This is acceptable due to the properties of this constituent the predominant exposure pathway of concern would likely be particulate transport on dust particles and not vapor intrusion.
2. **Section 2.0, 2rd paragraph, page 4 –** It is stated that "in order to assess the potential risk to relevant receptors from VI, CRA will complete a VI Study consisting of the following" and four bullets about sampling procedures are provided. However, there is no discussion about how the analytical data that is collected will be evaluated. Please add a bullet to address this; it is acceptable to reference a later section that provides the specific details on data evaluation. There is also no discussion of potential future VI investigation activities that may be performed if necessary.
3. **Section 2.0, 2rd paragraph, 2nd bullet, page 4 –** It is stated that subslab vapor sampling will be performed and the COCs include the following: undifferentiated combustible/explosive gases (measured as equivalent concentration of methane), TO-15 VOCs, naphthalene, and benzo(b)fluoranthene. Please remove mention of benzo(b)fluoranthene.
4. **Section 2.1, 3rd paragraph, page 7 –** It would be more appropriate to reference sections of the EPA Region 5 Vapor Intrusion Guidance rather than copy the text, or summarize the key points that were used to develop the sampling strategy. At a minimum provide the section numbers for each paragraph of copied text. It appears that the entire Section 6.2.3 was copied with the exception of the last sentence, and several bullets from Section 4.7.2 were also copied.
5. **Section 2.2, 1st paragraph, page 8** – Please add a statement indicating that subslab soil vapor probes will be located at least 5 feet from exterior walls.
6. **Section 2.2, 1st paragraph, page 9 –** It is stated that CRA will avoid installing subslab probes in the vicinity of underground utilities. Please confirm that each proposed subslab soil vapor location will be cleared by a private utility clearance company with a concrete scanner (hand-held Ground Penetrating Radar unit or similar).

7. **Section 2.2, 5th paragraph, page 9 –** It is stated that the subslab soil vapor probes will be constructed of ¼ inch diameter tubing. Please clarify that a female connector tube fitting will be attached to the tubing to complete the probe and a probe cap will be placed on the probe.

8. **Section 2.2, 6th paragraph, page 9 –** It is stated that the subslab soil vapor probes will be secured in place with "quick drying Portland cement slurry." Please confirm that 100% pure Portland cement will be used, as quick drying cements often contain VOCs. It is recommended that "quick drying" be removed from the sentence, especially since it is stated that the cement will be allowed to set for 24 hours.

9. **Section 2.3, 1st paragraph, page 9 –** It is stated that CRA will measure the level of combustible gases within a structure or the subslab vapor beneath the structure using a combustible gas meter. Please specify the make and model of the combustible gas meter that will be used. A LandTech GEM 2000 landfill gas meter should also be used to measure methane concentrations.

10. **Section 2.3.1, 1st paragraph, page 10 –** It is stated that CRA will use a personal sampling pump to purge the subslab soil vapor probes. This purging method is inappropriate for two reasons: 1) the pump is designed for use in ambient air and is only capable of pulling a vacuum of up to 1 inch of mercury (Hg); and 2) the effluent soil gas cannot be captured in a Tedlar bag; therefore, confirmation of actual purging and measurement of the purged gas cannot be determined. Additionally, the potentially impacted soil gas would be discharged to the ambient air within the building.

References

EPA Region 5 (U.S. Environmental Protection Agency, Region 5). 2010. *U.S. EPA Region 5 Vapor Intrusion Guidebook*. October.

South Dayton Dump and Landfill Site Moraine, Ohio (Site)

Proposed Outline for the Vapor Intrusion (VI) Investigation Work Plan

1.0 Introduction

The discussions about the work being performed in accordance with the existing project FSP, QAPP and HASP and benzo(b)fluoroanthene are not recommended for the introduction.

1.1 Purpose and Scope (already covered in current Introduction and Section 1.0)

1.2 Facility Description (brief description of site history, environmental investigations performed to date, and current site condition. Reference the RI/FS)

1.3 Regulatory Framework (move from current location in Section 2.0)

1.4 Work Plan Organization

2.0 Conceptual Site Models for VI Study Buildings

Explain that the building surveys were conducted to gather information necessary to develop sampling plans for each of the VI study buildings. Provide a conceptual site model (CSM) for <u>each</u> building that consists of text summarizing: 1) the historical soil/groundwater/soil gas VOC and naphthalene sampling data in the vicinity of the building (should also be illustrated on a figure for each building); 2) the building use and occupancy; and 3) the building characteristics from the building survey.

2.1 Lot 3207

2.1.1 Building 1 - Globe Office and Warehouse

2.1.2 ..... etc.

3.0 Data Quality Objectives

Step 1 - State the Problem

Should contain text similar to: "VOCs, naphthalene and methane are present in soil, groundwater and/or soil gas in the vicinity of multiple buildings on or immediately adjacent to the site." Then include the text that was already developed for this step, but include text to address the methane issue. Change the last sentence to: "Additional data is required to determine if VOCs and naphthalene present in soil, groundwater, and/or soil gas in the vicinity of multiple buildings on or immediately adjacent to the site have the potential to pose and unacceptable health via the vapor intrusion pathway, at these buildings." Include a similar statement for methane.

Step 2 – Identify the Goals of the Study

Discussion should include that the goals of the study are to determine if subslab soil vapor and/or indoor air sampling data exceeds any of the multiple sets of screening levels discussed in Step 6. Some of the multiple goals to address are: A) is additional VI investigation necessary at the building? B) is there an explosion hazard? C) is emergency mitigation required? A flow chart may assist in clearly showing how the analytical data will be evaluated against the different sets of screening levels and what each sequential step would be.

Step 3 – Identify the Information Inputs

Information inputs should in part include: 1) the existing groundwater, soil and soil gas data; 2) the building characteristic/survey data; 3) the subslab soil vapor and indoor air data that will be collected; and 4) the multiple sets of screening levels that will be used to evaluate the data. The methane issue should be included in this step. Also, discussion of indoor air sampling at buildings without concrete slabs should be removed because no such buildings are included in the VI study (this was addressed in the introduction section).

Step 4 – Identify the Boundaries of the Study

Include the text that was already developed for this step; however, please state that the study buildings are "... presented in Table 1 and on Figure 1".

Step 5 – Develop the Analytic Approach

Include the text that was already developed for this step; however, provide explanation of the field measurement process for methane or reference a section of the work plan where it is discussed. Also, discussion of indoor air sampling at buildings without concrete slabs should be removed because no such buildings are included in the VI study (this was addressed in the introduction section).

Step 6 – Specify Performance or Acceptance Criteria

Revise to include a more detailed description of the multiple sets of screening levels; a bulleted list may assist in presenting this data. Tables of each set of screening levels should be included in the work plan. In the current second paragraph please also include discussion of screening values for non-carcinogenic constituents.

Step 7 – Develop the Plan for Obtaining Data

Revise this section to include a statement similar to: "indoor air and subslab soil vapor samples will be located to provide adequate coverage of the entire building, while being biased towards areas where higher soil, groundwater, and/or soil gas VOC concentrations have been historically observed.

4.0 Proposed Sampling Activities

Briefly describe the proposed sampling activities. Explain that work will be performed in accordance with the existing project Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP), Health And Safety Plan (HASP), and the addendums to these documents which are provided in Attachments B – D.

4.1 Sampling Locations

Reference Table 1 and the sample location figures. Explain in general the criteria used to select the number and location of samples for each building. Reference the guidance documents and summarize the key points (but do not copy large sections of the reference document into the work plan).

4.2 Sampling Procedures

Describe the sampling procedures and reference the appropriate FSP addendum, including quality assurance/quality control (QA/QC) samples in each of the sampling sections. Include discussion that SUMMA canisters will be checked several hours before the end of the sample collection period to ensure that the canister pressures do not reach zero. Canisters that reach zero pressure should not be analyzed and the sample should be re-collected. Include discussion that two sampling events will be performed, one in the summer months and one in the winter months, to capture opposing weather conditions. Include discussion on sampling at the Globe property on weekends or after hours (ensure HVAC is set to typical operating conditions during sampling.) Include discussion that the first round of indoor air sampling will only be performed at one property (the Barnett residence), but additional properties may subsequently require indoor air sampling based on the first round results.

4.2.1 Subslab Soil Vapor Probe Installation and Sampling

4.2.1.1 Subslab Soil Vapor Probe Installation

Include discussion on utility clearance prior to installation. Discuss how floor covering may dictate sampling locations (e.g. avoiding asbestos tiles and new carpet).

4.2.1.2 Subslab Soil Vapor Probe Purging and Leak Checking

This step will require the use of a Swagelok valve (part number SS-4P4T) or similar device to ensure ambient air doesn't contaminate the probe after purging.

4.2.1.3 Subslab Soil Vapor Sampling for Methane

4.2.1.4 Subslab Soil Vapor Sampling for VOCs and Naphthalene

4.2.2 Indoor Air Sampling for VOCs and Naphthalene

4.2.3 Indoor Air Sampling for Methane

4.2.4 Outdoor Air Sampling for VOCs and Naphthalene

4.3 Sample Analysis

Discuss in this section what analytical methods will be used, and specifically the analyte? This section should address VOCs, naphthalene, and methane; and what constituents (e.g. the SVOC benzo(b)fluoranthene) will not be included. Reference the QAPP addendum.

5.0 Data Evaluation and Reporting

Provide a detailed explanation of how the data will be evaluated, including data validation. This section should be consistent with Section 8 of the USEPA Region 5 Vapor Intrusion Guidance, specifically the flow charts presented in Figures 6 and 7. Describe the multiple sets of screening levels and the consequences of exceedences. Reference tables of the screening levels. It may be helpful to provide a flow chart to illustrate this process.

6.0 Schedule

Most of the discussion in the current schedule section of the work plan should be moved into the new data evaluation and reporting section. This section will just summarize the VI investigation timeline.

7.0 References

Tables

Table 1 – Summary of Building Survey Results and Proposed Sampling Strategy (same as current Table 1)

Table 2 – USEPA Subslab Soil Vapor Screening Levels for Further VI Investigation (ELCR = 10^{-6}, HQ = 0.1) (include residential and industrial levels)

Table 3 - USEPA Indoor Air Screening Levels for Mitigation (ELCR = 10^{-5}, HQ = 1.0) (include residential and industrial levels)

Table 4 - USEPA Indoor Air Screening Levels for Removal (e.g., High Priority) Mitigation (ELCR = 10^{-4}, HQ = 10) (include residential and industrial levels)

Table 5 - USEPA Indoor Air Screening Levels for Emergency Mitigation (ELCR = 10^{-3}, HQ = 100) (include residential and industrial levels)

Tables 6 (*as many tables as needed*) - Ohio EPA Screening Levels

Tables 7 (*or numbered as appropriate*) - Methane Screening Levels

Figures

Figure 1 – VI Study Buildings (same as current Figure 1)

Figures 2 thru 28 – (*or numbered as appropriate*) – Building CSMs and Proposed Sample Locations

Attachment A – Completed Building Survey Forms and Photographs

Same as the existing Attachment A

Attachment B – Addendum to the Existing Project FSP

The FSP addendum should address subslab soil vapor and indoor air sampling for VOCs, naphthalene and methane. The subslab soil vapor and indoor air sampling SOPs will be part of this attachment.

A review of the existing FSP revealed that the following items should be addressed:

- Update Section J.2.6.
- Update Section J.4.0 – address QA/QC samples for subslab soil vapor and indoor air sampling for VOCs, naphthalene, and methane.

- Update Section J.5.1 – address sample labeling for subslab soil vapor and indoor air sampling for VOCs, naphthalene, and methane.
- Update Section J.6.0 – the GEM 2000 should be used instead of the GEM 500, and add the helium detector. A multi-gas meter for LEL readings, or similar device, should be discussed.
- Update Section J.7.0 – add decontamination procedures for subslab soil vapor sampling equipment.
- Update Table J.2.1 – discuss how many field duplicate samples will be collected (though typically MS/MSD samples are not collected for air media samples). Discuss the laboratory parameters.
- Update Table J.6.1 - the GEM 2000 should be used instead of the GEM 500, and add the helium detector. A multi-gas meter for LEL readings, or similar device, should be discussed.

These sections or tables do not need to be duplicated in the FSP addendum as long at the necessary information is provided.

Attachment C – Addendum to the Existing Project QAPP

The QAPP addendum should address subslab soil vapor and indoor air sampling for VOCs, naphthalene and methane.

A review of the existing project QAPP revealed that the following items should be addressed:

- Discuss the matrix code that will be used in the sample ID for subslab soil vapor.
- Update Table K.3.1 - discuss how many field duplicate samples will be collected (though typically MS/MSD samples are not collected for air media samples). Discuss the laboratory parameters.
- Update Table 3.4 with RSL-based soil gas screening levels (SGSLs) and required laboratory reporting limits.
- Update Table K.4.1 with the residential and industrial RSLs for air.
- Update Table K.5.1 to include field equipment used for the VI study.
- Update Table K.5.3 – this discussion should include the TO-15 method instead of TO-14A method; and include the TO-15 method in the reference section.

These sections or tables do not need to be duplicated in the QAPP addendum as long at the necessary information is provided.

Attachment D – Addendum to the Existing Project HASP

The HASP addendum should address subslab soil vapor and indoor air sampling for VOCs, naphthalene and methane.